

Nuisance animal management

The combination of wild animals and humans in state parks can frequently cause problems, particularly when a visitor's actions cause an animal to alter its normal behavior and become a nuisance or danger to park visitors. Frequently, well-meaning park visitors fail to recognize the causes, symptoms, or results of nuisance animals. Many potentially harmful situations occur because visitors either deliberately fail to leave wildlife alone or unwittingly contribute to the problem by failing to understand the problems associated with feeding, improper food storage in campsites, etc. Problems also arise if visitors deliberately or unwittingly introduce exotic animal species into parks that may compete with native species.

To address these situations, the Natural Resource Program has developed nuisance animal management guidelines (see next page), which emphasize ways to avoid nuisance situations and ways to deal with issues as they occur. The guidelines also include instructions on the management of nonnative animal species, such as feral hogs.

North Carolina Department of Environment and Natural Resources
Division of Parks and Recreation

NUISANCE ANIMAL GUIDELINES



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NUISANCE ANIMAL MANAGEMENT GUIDELINES

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1.0 DIRECTOR'S STATEMENT

As the amount of wildlife habitat shrinks, the importance of our parks as wildlife refuges in an increasingly urban landscape makes it even more important that our staff endeavor to minimize human threats to native species.

With proper precautions, people and wildlife can coexist with little threat to one another. However, the proximity of wildlife and visitors can cause potential problems, particularly when visitors' actions cause an animal to alter its normal foraging behavior. Animals that become dependent on human food present a threat to visitor safety and health. Such nuisance situations can also arise from escaped domestic animals, or an overabundance of native animal species.

Frequently, well-meaning park visitors fail to recognize the causes, symptoms, or results of nuisance animals. This guideline is intended to provide staff with information on how to recognize and control nuisance animals. It includes information on visitor education, methods of control, and sources for additional assistance in the identification and control of nuisance animals. Any actions undertaken to control or remove nuisance animals in North Carolina's State Parks System will be in accordance with these guidelines and the division's Law Enforcement Guidelines.

2.0 INTRODUCTION AND POLICY STATEMENT

It is the policy of the North Carolina Division of Parks and Recreation to perpetuate native animal populations as part of the natural ecosystems protected by the state parks system. The objective is to allow native species to live and behave naturally. Ideally, human interactions with wildlife will have little or no effect on the animal.

Despite best efforts, situations can arise in which an animal may constitute a threat to park visitors, facilities, or cultural and natural resources. These instances typically occur in areas where natural habitat overlaps with visitor areas. They may also arise when wildlife are unexpectedly encountered, when they are sick or injured, when they are protecting young, if they are deliberately fed, or if their populations become unnaturally high.

Most park visitors are likely naive about the biology and behavior of most wildlife. Nuisance animals are usually a consequence of behaviors that arise from improperly stored food, poor camping practices, improper trash disposal, or deliberate feeding. These unnatural food sources inevitably lead to negative interactions where the animal is always adversely affected.

Park staff may need only to educate visitors to alter their behavior. Wildlife behavior can also be modified through simple techniques. In all cases, staff and visitors must be warned about potential threats.

The following points will apply to nuisance animal management in North Carolina state parks:

- Any injured or diseased animal or any animal that presents an imminent danger to an employee or visitor may be immediately destroyed or otherwise rendered harmless.
- Non-native animals are not considered nuisance animals; they are exotics that do not belong in natural areas and may be subject to immediate removal according to section 7.0 (trapping and lethal control, respectively).
- For non-native species: removal of the entire population is preferred. For native species, the focus will be on individuals when possible.
- These guidelines will not apply to legally-stocked, non-native fish species supplied by the North Carolina Wildlife Resources Commission (WRC). They will apply to any fish or wildlife stocking not sanctioned by DPR and WRC.
- Any control actions will comply with all DPR guidelines and policies, all applicable state and federal laws, and will require collaboration with the Natural Resources Program, Operations staff, and other agencies as deemed appropriate or required by law.
- Except in cases of imminent danger, lethal control of nuisance animals will be the last resort.
- Remember, all wildlife need three things: food, water and shelter. Remove any one of these and the animals will likely go somewhere else. *Treat the problem not the symptom.*

3.0 DEFINITIONS

Nuisance Animal

Any native animal whose actions create special management problems, usually on a repetitive basis.

Native Animal Species

Any animal species that occurs, has occurred, or may occur in a park only as a result of natural processes.

Non-native Animal Species

Any animal species that is artificially introduced and that does not naturally occur in the ecosystem in question. This includes escaped domesticated (feral) animals. Examples include nutria, red fox, and wild boars.

Population

A group of individuals of one species that occurs in a distinct portion of the species' natural range. Populations interbreed and have a common set of genetic characteristics.

4.0 CHARACTERISTICS OF NUISANCE ANIMALS

Because many species can become tolerant of humans, it is important to accurately assess and document an animal's behavior before classifying it as a nuisance. Care must be taken to insure that natural behaviors are not mistaken for nuisance traits. Examples of natural behaviors which could easily be confused with nuisance traits include, but are not limited to: dispersing young, traveling to forage, breeding or denning, or unexpected encounters.

Nuisance animals will at times act unnaturally by exhibiting bold, sometimes aggressive behavior. Factors that park staff must consider when determining if an animal is a nuisance are **habituation** and **conditioning**. Further, nuisance animal populations can occur when over-abundant populations result in unacceptable impacts to other natural resources.

Habituation

Habituation is the capability that all animals possess in varying degrees to become accustomed to routine aspects of their environments. If areas of human use overlap with an animal's habitat, the animal must tolerate, or become habituated to, humans. Examples of habituated, non-nuisance animals that continue to use or move through visitor use areas en route to established territories or feeding areas.



Habituated Deer

Photo: www.johnsoncreek.co.uk

Food Conditioning

Habituation may lead to food conditioning if the animal learns to associate the presence of people and the likelihood that food will be available, and alters its behavior to guarantee access to that food. Food conditioning usually occurs in high use areas; campgrounds, picnic areas, etc. Many native species are susceptible to food conditioning and can pose a serious threat to visitor safety. Reversing the behavior of food-conditioned animals is extremely difficult, and is likely to fail in most cases. Addressing these behaviors as soon as they appear is essential.

Food conditioning may be characterized by the following behaviors:

- They may visit the same area repeatedly, altering their normal, nocturnal habits to coincide with the daytime activities of visitors.
- They may appear at campsites around meal times, raid trash cans, picnic areas and camping areas, beg for food, and readily accept handouts.
- They may continually develop skills to outwit systems designed to keep them out of food containers, trash cans, etc.
- They may become increasingly aggressive and bold over time, and may be unfazed by various harassment tactics.



Food Conditioned Bears

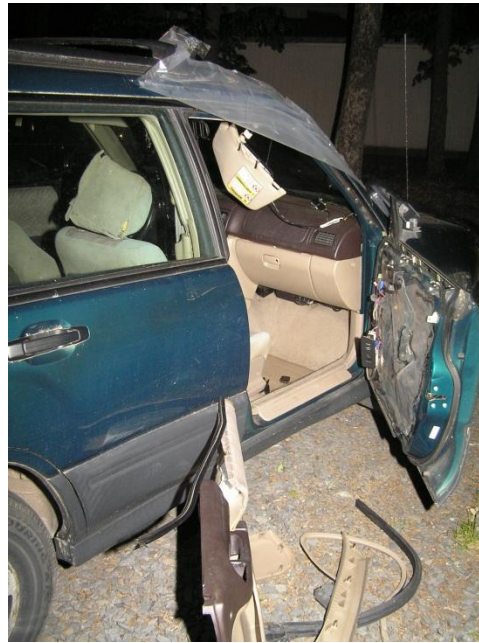
Photo: NPS

5.0 CONDITIONS FOR A NUISANCE DETERMINATION

- The threat of physical injury or disease transmission to humans exists due to persistently abnormal, aggressive, or conditioned behavior.
- An injured, diseased, rabid, or otherwise unpredictable animal is deemed to be beyond rescue, or to present an immediate threat to personal safety.
- Negative impacts inflicted on rare species, valuable natural areas, or cultural resources.
- Unacceptable damage occurs to park facilities or neighboring property.
- Non-native species that take up residence on the park, such as wild hogs, red fox, or feral animals, do not require a nuisance determination to be subject for removal.



Feral hog wallow. Photo: Marshall Ellis



Bear-damaged car. Photo: NPS

6.0 NUISANCE ANIMAL MANAGEMENT

Emphasis must be placed on controlling the human and animal behaviors that contribute to nuisance situations. Identifying a practical management option is the most important step toward eliminating the problem. The Division's credibility can be seriously affected by improper responses to nuisance situations. It is vital that park staff make informed decisions regarding the prevention and control of nuisance animals.

With the exceptions addressed elsewhere in this guideline regarding imminent threats to personal safety, injured animals, and feral species: non-lethal management will be the desired course. The lethal removal of any nuisance animal will occur only as a last resort.

Documentation and Planning

A nuisance determination must be supported by documentation. Most often this will be incidents documented in DPR Case Incident Reports (Form PR-63). Photographs should be included whenever available. Nuisance animal populations that negatively impact natural resources (rather than conflicts with park visitors) may require different types of documentation. Once a nuisance animal or species has been documented, a comprehensive park-specific plan is to be prepared addressing the areas listed below (Sections 6.2-8.0) from modification of human behavior through lethal control, if warranted.

Modification of Human Behavior and Influence

Public education is the most important method for warning visitors about behavior that encourages nuisance animals. Visitors must be warned that animals begging for food, eating garbage, and raiding campsites are not part of the natural environment, and to keep a safe distance from wild animals. Park specific strategies should include signage, educational programs, personal contact, wayside exhibits, warning notices, and citations.

All warnings should be permanently mounted, prominently posted, clearly visible, easy to read, and bluntly worded. It is recommended that DPR staff follow the NPS model of posting standardized, easy-to-read warnings at all visitor contact points. Warning messages include:

- Never feed animals or leave food out for them. Feeding animals conditions them to expect handouts, and may lead to a confrontation and serious injury if food is withheld.
- Every park visitor has a responsibility to ensure that the park's wild animals remain wild.
- Never store food or garbage inside tents or leave it in plain sight. Animals can learn to recognize food packaging, picnic baskets, and coolers.
- When camping, dispose of trash properly. When not in use, store all cooking, cleaning, and personal hygiene supplies out of sight, in a locked vehicle or food locker.





NPS Warning Signs

Photos: National Park Service



Examples of Warning Signs

Sanitation and Garbage Disposal

The presence of human food and garbage has been widely documented as the primary factor initiating behavioral changes that result in nuisance animals.

- Remove trash daily from areas with high vulnerability to scavenging animals.
- Assume that all conventional recycling containers, dumpsters, and trash cans will fail. Use animal-proof containers. Improvised lid-holding systems, such as heavy weights, shock cords, or ropes will be chewed through or - more likely - visitors will fail to use them.



Raccoon with standard trash can. Photo: www.gov.pa

- All containers should be made of galvanized steel, with drainage holes at the bottom. Always use removable plastic liners. Weather conditions may require different construction materials, e.g., the use of wooden containers near the coast to prevent rusting.
- Lids must be self-closing/latching, but avoid intricate latch systems. They will deter animals, but they will also deter visitors.
- Mailbox-type cans should open OUT, not in.
- Reduce the number of trash and recycling containers by clustering them in central locations, particularly in picnic areas and campgrounds. Animal-resistant, small dumpsters in campgrounds can eliminate the need for individual containers.
- With the exception of animal proof dumpsters, do not rely on free-standing containers, as large animals will turn them over. Secure containers with racks, stand-pipes, tie-down cables, or concrete anchors.
- Field-tested animal-resistant trash/recycling containers are available from a variety of vendors, including the NC Dept. of Corrections (<http://www.correctionenterprises.com/>).



Upright animal-proof trash can. Note hidden latch and forward opening door. Photo: Marshall Ellis



Ganged animal-proof trash cans.

Photo: Marshall Ellis



Animal-proof trash can with hidden latch. Photo: Marshall Ellis

Food Storage

Assume that most visitors will be unskilled at safeguarding their food and trash. For front country areas, storage in a locked vehicle or an NPS-style food locker is preferred.

Higher caution is recommended in bear country. Food and trash stored in vehicles should never be visible to animals and should be covered and/or locked in the trunk. Car windows must be completely closed and doors locked, as some animals can easily break windows or open doors.

Back country campers should know how to adequately bag and hang their food. Or, they should be cautioned to carry animal-resistant canisters or bags made of materials such as Lexan, polycarbonate, Spectra, or Kevlar. In lieu of installing food lockers in back country sites, parks should install cable hoist systems modeled after those used in the Great Smoky Mountains National Park. Use steel cables – NOT ROPE – for these systems.



Food locker at Mount Mitchell State Park.

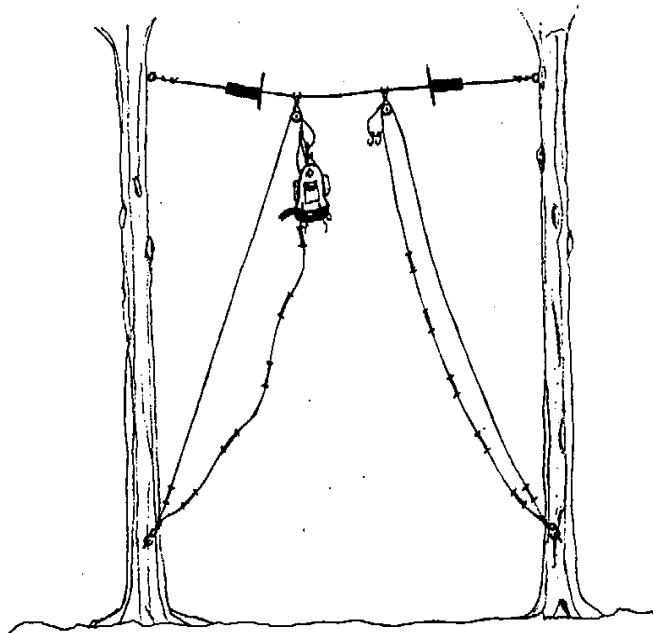
Photo: Marshall Ellis



NPS Food Locker – note anchor.

Photo: Marshall Ellis

**BACKCOUNTRY FOOD STORAGE
CABLE SYSTEM**
GREAT SMOKY MOUNTAINS NATIONAL PARK
September, 1999



Example of back-county cable system for food storage.
Warnings about proper food storage should stress the following points:

- Never store food, cooking gear, cleaning supplies, or personal toiletry items such as toothpaste, Chap Stick, deodorant, etc. inside tents. Secure these items out of sight in a vehicle or food locker to avoid attracting animals.
- Keep a clean campsite. Food, cooking gear, or cleaning supplies are not to be left unattended, and never leave food out for animals.
- No cooler, no matter how large, heavy, or intricately latched, will deter wildlife. Coolers are not acceptable as storage lockers and must be stored in vehicles or food lockers.



NPS campsite warning sign.

Photo: NPS

Facilities Planning and Protection

Analysis of potential nuisance situations should be made prior to the construction of any park facilities. Field and design staff should consult with Natural Resources Program staff in the design phase to ensure that potential problems can be avoided or mitigated.

Facilities should include plans for animal-resistant trash and recycling containers. Other measures to make structures less susceptible to habitation by wild animals include the following:

- Cover potential entrances, such as chimney caps and openings in attics, roofs and eaves.
- Trim overhanging branches away from all structures.
- Keep all vent covers in good repair and immediately repair all damage.
- Keep eaves clean and block potential nest sites with wire mesh.

Citations

The feeding of wildlife in North Carolina state parks is a citable offense under 15A NCAC 12B .0201.

7.0 CONTROL OF NUISANCE ANIMALS

All of the control techniques for nuisance animals require thoughtful and planned actions. While some situations may require immediate actions, most instances will allow for preparation and review of a management plan.

Aversive Conditioning

Non-lethal, aggressive harassment, also referred to as aversive conditioning, can deter animals from a developed area. Non-lethal methods can include shouting, pan banging, vehicle or air horns, paintball guns, and shotgun or pistol noise-making rounds. For larger mammals, such as coyotes, deer, and bears; pepper spray, 12 gauge shotgun beanbag rounds, or 12 gauge shotgun rubber buckshot or slugs may be warranted. The use of aversive methods involving firearms is limited to commissioned DPR law enforcement staff or other similarly qualified personnel and must adhere to the protocols outlined in Appendix 1.(Appendix 1 was written for bear but may be similarly applied to other large animals.)

To maximize effectiveness, harassment must be continual, concentrated, and caustic. The negative consequences of the harassment must exceed the positive rewards from gaining access to food. Some animals may adapt to this conditioning, so it is strongly recommended to mix and match techniques as warranted.

Where visitors are approaching and/or feeding wildlife, DPR staff should conspicuously harass these animals in full view of visitors and use the opportunity to explain Division policy on feeding wild animals. Visitors should be encouraged to shout, bang pots, etc. if they encounter nuisance animals. However, unless personal injury is likely, visitors should not be encouraged to employ techniques that could result in injury or death to the animal, as this can easily degenerate into unnecessary harassment of the park's wildlife.

Trapping and Relocation

Trapping and relocation of individual nuisance animals is generally unsuccessful. Further, state and federal regulations prevent the relocation of most species due to animal-borne diseases, habitat availability, etc. However, relocation of some species, such as deer, may prove an effective method of quickly reducing impacts to natural resources.

Trapping and hazing large mammals, such as problem bears, with aversive conditioning while they are in the trap, and then releasing them in the same area may be advisable in some situations. This technique frequently coerces these animals to leave the area but does not physically harm them.

For situations involving non-native domestic animals that are known to be pets or hunting dogs, park staff will work with local animal control staff as needed. Where feasible, DPR will be appropriately house, feed, and water said animals during their captivity. Further, DPR staff will notify pet owners and allow them to retrieve their animals following capture if possible.

No trapping of any species will occur without first consulting the local animal control agency and, other agencies if needed, such as WRC, the US Fish and Wildlife Service, the county agricultural extension office, etc., regarding permits, trapping methods, assistance, etc.

When trapping, the following points must be observed:

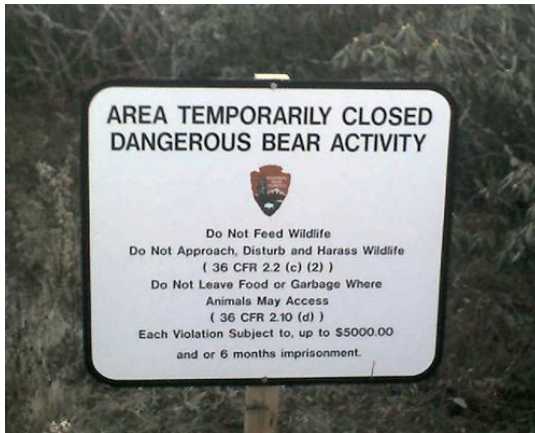
- Live traps are required. Care must be taken to ensure that only the target animal is trapped.
- Traps must be placed so that their visibility by the public is minimized. Traps should be set at night, but day-active animals may require day time trapping. In this case, the area may be closed to public access.
- All traps are to be checked at daylight, with no more than a 12-hour lapse between inspections. Trapped animals are to be moved to shaded and secure areas away from visitors, and are to be adequately fed and watered.
- When traps are not in use they must be securely stored and locked in the closed position.

Closure of Areas

In certain cases, nuisance situations can be avoided by temporarily closing areas that are known to have human-wildlife interactions. Temporary closures are also recommended in instances where unexpected or potentially dangerous encounters may occur, such as if a bear has been sighted along a trail or in a campground, if mothers with young-of-the-year are known to be in a particular area, or if day-active food-conditioned animals are deemed to be a threat to visitor safety or resource protection. The period of closure will be determined by the animal's behavior. Once the animal has moved out of the area and the nuisance behavior is judged to have ceased, the area may be reopened.

Closures should be coordinated with the Natural Resources Program and the Chief of

Operations; they must be clearly signed and supported by documentation. Closures should be restricted only to the season and area of impact. If needed, closures should be combined with a program to remove or control any human factors leading to nuisance animals and when warranted, a press release explaining the situation and the reasons for undertaking the action should be submitted.



NPS closure signs.



Photos: NPS

Euthanasia

As noted in Section 2.0, the immediate euthanasia of wildlife deemed to represent an imminent danger to safety is warranted. Park staff will have the discretion to assess the situation and consult with the Natural Resources Program, WRC, and others as appropriate.

Otherwise, the euthanasia of any healthy native animal will be a measure of last resort after all other efforts have failed. Removals will occur in collaboration with state and federal agencies as needed, and in accordance with the park specific plan. Control plans for non-native species, such as wild boars, goats, etc., may begin immediately without documentation of adverse impacts, whereas non-natives are always assumed to have adverse impacts.

In such cases, the park superintendent will notify the district superintendent that lethal control efforts are to begin. Staff must document the actions taken to date, the results, and the method(s) proposed for both the short and long term. The following points must be observed:

- Euthanasia methods must adhere to the American Veterinary Medical Association euthanasia guidelines (http://www.avma.org/issues/animal_welfare/euthanasia.pdf).
- All instances of euthanasia must occur humanely and out of the sight and sound of visitors.
- Euthanasia may require a license, special permit, or other notification and documentation from local, state, or federal authorities. Park staff should know what they will need BEFORE they encounter this situation.

- Individuals with permits to carry concealed weapons in state parks may use those weapons only in accordance with state law, and only in instances of imminent danger.
- The removal of animals for research purposes, such as herd health analysis, population ecology studies, etc., will be coordinated through the Natural Resources Program and all appropriate state and federal agencies.
- For native species, removal will generally focus on individuals, not entire populations. However, where conditions warrant, population-level reductions may be undertaken for situations such as over-population, over-grazing, disease, unacceptable impacts to natural or cultural resources, etc. Population-level removals will require coordination with appropriate state and federal agencies.
- Removals will typically be limited to common species. With the exception of imminent threats to personal safety, the lethal control of any state or federally-listed species will require consultation with the appropriate state and federal agencies.
- Where warranted, individual parks will develop species-specific management plans.

Public Relations Issues

Lethal control may elicit strong protests from the public, especially in instances where imminent danger is not apparent. Park staff must be prepared to educate the public about the causes of the problem, the options, and the non-lethal actions that were taken.

With the exceptions of imminent danger or injured wildlife, under no circumstances will wildlife be removed clandestinely or without thorough documentation. The park superintendent will collaborate with Natural Resources Program staff, I&E staff, and DPR's public information officer to develop appropriate strategies.

8.0 MONITORING AND FUTURE CONTROL

Nuisance animal management may require a long-term program. Regardless of the level of intervention, it will be imperative that park staff monitor the area(s) and species that have been affected and to document the results of the intervention.

Also, since nuisance animals are almost inevitably associated with human-induced causes, the importance of identifying and addressing those causes cannot be overstated. Most likely, this will involve greater attention to visitor education and enforcement. Controls undertaken in the absence of steps to decrease animals' access to food and garbage will fail, even in the short-term.

Further, the criteria for success must be identified as part of the management program. These criteria must be easily measured and include parameters such as changes in the numbers of

incidents, changes in severity, installation of animal resistant trash/food storage systems, visitor education programs, posted warnings, etc. It will be the responsibility of the park superintendent to ensure that all control programs are adequately monitored and documented.

9.0 ROLES AND RESPONSIBILITIES

Director:

Must approve the implementation plan of any lethal control options for native species.

Chief of Operations:

Has the responsibility for implementation of the nuisance animal guidelines, and must approve any plan containing lethal or potentially lethal control methods.

Chief of Planning and Natural Resources:

Is responsible for the development of biological and ecological policy aspects of nuisance animal management including development of guidelines and acceptable control measures.

District Superintendent:

Shares with the park superintendent and the head of natural resources the responsibility for final approval of all control plans. The district superintendent will approve the allocation of district personnel and assets to assist in the implementation of any park's control plan.

Park Superintendent:

Shares with the district superintendent and the head of natural resources the responsibility for final approval of all control plans. The park superintendent and the natural resources program are jointly responsible for developing park-specific control programs. Development of a plan will be undertaken with consultation from and other knowledgeable personnel as appropriate.

Natural Resources Program Staff:

Is responsible for native versus non-native designation and will provide technical assistance in the prevention and assessment of nuisance animals. The natural resource program and the park superintendent are jointly responsible for preparation of park-specific control plans. The head of the Natural Resources Program shares with the park superintendent and the district superintendent the responsibility for final approval of all control plans.

Public Information Officer:

Is to be informed when any control action is determined by the superintendent to possibly have adverse public reactions. Further, to determine the public relations course of action, if any. Excluding animals that are destroyed complying with the division's Law Enforcement Guidelines, the removal of any nuisance animal may be accompanied by a press release with attention given to the causes of the problem and describing the steps that have been taken.

Appendix 1 – NC DPR Bear Aversion Safety Protocol

Goal

To safely reduce the rate of bear-caused property damage and potential human injury occurring within park boundaries.

Definition

Bear aversive conditioning is defined as the use of bear deterrent rounds, bear spray, cracker shells, sirens, or horns to temporarily move bears away from highly frequented areas within the park(s).

Purchase of Equipment

Only approved equipment will be utilized for aversive conditioning. Equipment will be purchased by the Parks Chief Ranger or District Superintendent. Individual parks are not authorized to purchase noise or physical deterrents, unless prior approval is received from the Parks Chief Ranger or District Superintendent.

Public Awareness

Care should always be taken to avoid negative public opinion concerning aversive conditioning. Actions should always be conducted in a humane fashion as to ensure public support and understanding.

Noise Deterrents

12 Gauge Cracker & Whistle Cracker Round: The cracker and whistle cracker are 12-gauge shotgun loads that travel about 100 m (335 ft per second) and explode with a loud bang, the whistler cracker also emits a loud screeching noise during flight. These types of deterrents are recommended for use in conjunction with physical deterrents rounds.

Guidelines for Use:

- Deterrents may be used on bears by any DPR commissioned ranger or other authorized personnel (non-commissioned rangers may use specifically designated non-lethal shotguns with non-lethal rounds), to move bears away from roadsides, developed areas, backcountry campsites, or in any other situation when there is a bear-related human safety or crowd control problem. Authorization for the use of aversive conditioning will be approved by the Park Superintendent, designee or higher level.
- Each use of any noise or physical deterrent will be documented on the Division's Case Incident Report form (PR-63) and submitted through the chain of command. The District Superintendent will provide a copy of the report to the appropriate Division regional biologist.

- Safety:
 1. Always consider human safety first. Have proper crowd control.
 2. Always be aware of the line of fire, the backdrop and the potential for ricochet.
 3. Always leave the bear an escape route.
 4. Place explosive between you and the bear, as one behind may scare it toward you.
 5. 12 gauge rounds should be used in un-choked barrels only - check the barrel of the gun after each shot to ensure there is no blockage that could result in a misfire.
 6. Fire into the air at a 45 degree angle for maximum distance. Cracker shells travel in an arc approximately 60 yards.
 7. NEVER fire noise deterrents directly at or under a bear as penetration may occur sometimes resulting in internal explosion (particularly with 12 gauge crackers used at a close distance).
 8. Avoid loading impact projectiles (e.g. rubber bullets, bean bags) and lethal rounds into the same firearm. It is preferred that parks with a history of nuisance bears have one or more specifically marked shotguns that are designated for non-lethal purposes. The shotguns can be issued by the Parks Chief Ranger.
 9. Less than-lethal projectiles will never be fired at human targets, or domestic pets, unless authorized by future policy.
 10. Due to the potential for forest fires, avoid using these deterrents in extremely dry areas (have a fire extinguisher available when using pyrotechnics under any conditions).
 11. Each user should attempt to familiarize with the use of issued less than-lethal rounds, to include the trajectory and range. Practice is recommended prior to utilization.
 12. Eye and hearing protection will be utilized while employing less than lethal munitions.
 13. Duty shotguns will not be loaded with less than-lethal projectiles on a routine basis.

Physical Deterrents

For each physical deterrent, it is highly recommended that users familiarize themselves with the use of each method, including trajectory and range. Each park should maintain practice session(s) to ensure familiarity before an instance where utilization is required.

Bear Spray: Although bear spray is largely used as a defensive tool in the wilderness, it can also be used as a deterrent to create a negative experience for the bear and as back-up protection when conducting aversion techniques.

Guidelines for Use:

- Deterrents may be used on bears by any park ranger or other authorized personnel, to move bears away from roadsides, developed areas, backcountry campsites, or in any other situation when there is a bear-related human safety or crowd control problem.
 - Each use of any noise or physical deterrent will be documented on the Division's Case Incident Report form (PR-63) and submitted to through the chain of command. The District Superintendent will provide a copy of the report to the appropriate Division regional biologist.
1. Bear spray is most effectively used at distances of less than 3-6 m (10-20 ft), when other tools may cause penetration.
 2. To be effective, the spray must get into the eyes and nose of the bear.
 3. When working with bears, the can of bear spray should be carried in your hand with the nozzle pointing away from you with the safety tab removed.
 4. If a bear is charging, point the canister towards the charging bear, slightly upwards, and begin spraying when the bear gets within 40 feet so that the bear runs into the fog.
 5. It can be used in a wide variety of situations (e.g. to evict bears from beneath buildings or to get them out of garbage containers).
 6. Bear spray will never be used on human targets or domestic pets, unless authorized by future policy.
 7. Bear spray should be cleaned from objects and the ground after use to avoid attracting bears. Research has shown that pepper spray can act as a bear attractant.
 8. Canisters, that have been fired, should also be cleaned (particularly the nozzle) and stored in bear-proof locations.
 9. If working backcountry patrol, store bear spray in a quickly accessible manner. Users should consider the carrying configuration of the spray as to maximize efficacy of employment. The use of belts, clips or chest carriers are suggested.
- Selection of Bear Spray:

1. The spray should have a minimum of 1.3 to 2.0 % capsaicin and related capsaicinoids derived from Oleoresin of Capsicum (*Counter Assault*™ or equivalent brand).
 2. The size of the container should be a minimum of 225 grams (7.9 ounces).
 3. The bear spray should spray in a shotgun-cloud pattern, which lasts a minimum of 6 seconds.
- Safety:
 1. It should be noted that bear spray may temporarily incapacitate a bear and care must be taken in and around pedestrian or vehicular traffic. You don't want to debilitate a bear that is about to run into traffic or bystanders.
 2. Caution should be taken in using bear spray on windy days as the wind can blow the spray back on the user.
 3. Care should be taken to avoid deploying bear spray in occupied areas as to prevent unintentional public exposure.
 4. Warning: the spray is explosive and extremely flammable and should be transported in an appropriate carrier.
 5. When transporting bear spray, always make sure the safety is securely in place and will not fall out.
 6. Canisters shall be replaced after 4 years and should be carried and stored as to prevent exposure to freezing temperatures. Range can be reduced by 50 % in cold temperatures.

12 Gauge Bean Bag Round: The 12 gauge bean bag is a shotgun round that discharges a 2.5 cm (1 in) fabric bag filled with lead shot, with a muzzle velocity of about 90 m (300 ft)/sec.

Guidelines for Use:

- Deterrents may be used on bears by any DPR commissioned ranger or other authorized personnel (non-commissioned rangers may use specifically designated non-lethal shotguns with non-lethal rounds), to move bears away from roadsides, developed areas, backcountry campsites, or in any other situation when there is a bear-related human safety or crowd control problem. Authorization for the use of aversive conditioning will be approved by the Park Superintendent, designee or higher level.
- Each use of any noise or physical deterrent will be documented on the Division's Case Incident Report form (PR-63) and submitted through the chain of command. The

District Superintendent will provide a copy of the report to the appropriate Division regional biologist.

- Safety:
 1. Always consider human safety first. Have proper crowd control.
 2. Always leave the bear an escape route.
 3. 12 gauge rounds should be used in un-choked barrels only - check the barrel of the gun after each shot to ensure there is no blockage that could result in a misfire.
 4. Always be aware of the line of fire, the backdrop and the potential for ricochet. For highest safety, any projectile should be handled as if it were a lethal round.
 5. Be aware of distances and do not discharge any closer than the recommended *minimum distance for each round, usually 10 m (30 ft), but check the individual product specifications*. The maximum effective range is usually 25 m (85 ft).
 6. Impact rounds should be fired so they strike the bear in the **HIND-QUARTER ONLY – NO head shots** – physical deterrents can cause severe injury and even death when used improperly or too close.
 7. Never use rubber slugs on cubs. Only bean bags should be used for younger or smaller bears.
 8. Less than-lethal projectiles will never be fired at human targets, or domestic pets, unless authorized in future policy.
 9. Avoid loading impact projectiles (e.g. rubber bullets, bean bags) and lethal rounds into the same firearm. It's preferred that parks with a history of nuisance bears have one or more specifically marked shotguns that are designated for non-lethal purposes. These shotguns can be issued by the Parks Chief Ranger.
 10. Duty shotguns will not be loaded with less than-lethal projectiles on a routine basis.

12 Gauge Rubber Slug: The 12 gauge rubber slug is a shotgun round that discharges a 73 grain rubber baton. The muzzle velocity is 220 m (738 ft)/sec and extreme caution must be exercised, as penetration or injury can occur when used with smaller bears or if it is discharged at a distance less than 25 m (85 ft).

Guidelines for Use:

- Deterrents may be used on bears by any DPR commissioned ranger or other authorized personnel (non-commissioned rangers may use specifically designated non-lethal shotguns with non-lethal rounds), to move bears away from roadsides, developed areas,

backcountry campsites, or in any other situation when there is a bear-related human safety or crowd control problem. Authorization for the use of aversive conditioning will be approved by the Park Superintendent, designee or higher level.

- Each use of any noise or physical deterrent will be documented on the Division's Case Incident Report form (PR-63) and submitted through the chain of command. The District Superintendent will provide a copy of the report to the appropriate Division regional biologist.
- Safety:

Improper use of 12 gauge physical deterrents can cause serious injury or death to officers, bystanders or the bear as well as cause property damage. The following guidelines **MUST** be followed to prevent problems:

1. Always consider human safety first. Have proper crowd control.
2. Always leave the bear an escape route.
3. 12 gauge rounds should be used in un-choked barrels only - check the barrel of the gun after each shot to ensure there is no blockage that could result in a misfire.
4. Always be aware of the line of fire, the backdrop and the potential for ricochet. To ensure the safety of bystanders, any projectile should be handled as if it were a lethal round.
5. Duty shotguns will not be loaded with less than-lethal projectiles on a routine basis.
6. Less than-lethal projectiles will never be fired at human targets, or domestic pets, unless authorized in future policy.
7. Be aware of distances and do not discharge any closer than the recommended *minimum distance for each round, usually 25 m (85 ft), but check the individual product specifications*. The maximum effective range is usually 75 m (250 ft).
8. Impact rounds should be fired so they strike the bear in the **HIND-QUARTER ONLY** – NO head shots – physical deterrents can cause severe injury and even death when used improperly or too close.
9. Never use rubber bullets on cubs. Only bean bags should be used for younger or smaller bears.
10. Check all rubber slugs for hardening, rubber rounds will harden over time (particularly if stored at temperatures of 32° F or less) and should be disposed of if they have become rigid as they can cause severe injury or death to bears.

11. Avoid loading impact projectiles (e.g. rubber bullets, bean bags) and lethal rounds into the same firearm. Rangers should reload with lethal rounds for routine law enforcement duties.

Lethal Projectiles

If lethal force is required in reference to nuisance bears, full power hunting 2 ¾" 1 oz. slugs may be utilized. The purchase of these items can be made locally, with approval of the Parks Chief Ranger or District Superintendent.

- Safety:
 1. Always consider human safety first. Have proper crowd control. Avoid engaging bears in crowded areas.
 2. Always be aware of the line of fire, the backdrop and the potential for ricochet.
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References:

Get Bear Smart Society. (2010). Responding to Human-Bear Conflict: A guide to less than-lethal management techniques. Retrieved from: <http://www.bearsmart.com/docs/responding-human-black-bear-conflicts.pdf>.

Gunther, K.A. (1994). NPS: Yellowstone National Park Bear Management Plan. Retrieved from: http://www.greateryellowstonescience.org/files/pdf/YNP_Bear_Management_Plan_Final_IV.pdf.